

**EXHIBIT 1 FOLLOWS THIS
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Exhibit 1

**Physics of
Semiconductor Devices**

SECOND EDITION

S. M. Sze

*Bell Laboratories, Incorporated
Murray Hill, New Jersey*

A WILEY-INTERSCIENCE PUBLICATION

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Appendix I

Properties of SiO₂ and Si₃N₄ at 300 K

Insulator:	SiO ₂	Si ₃ N ₄
Structure	Amorphous	Amorphous
Melting point (°C)	~1600	—
Density (g/cm ³)	2.2	3.1
Refractive index	1.46	2.05
Dielectric constant	3.9	7.5
Dielectric strength (V/cm)	10 ⁷	10 ⁷
Infrared absorption band (μm)	9.3	11.5–12.0
Energy gap (eV)	9	~5.0
Thermal-expansion coefficient (°C ⁻¹)	5×10 ⁻⁷	—
Thermal conductivity (W/cm-K)	0.014	—
dc resistivity (Ω-cm)		
at 25°C	10 ¹⁴ –10 ¹⁶	~10 ¹⁴
at 500°C	—	~2×10 ¹³
Etch rate in buffered HF ^a (Å/min)	1000	5-10

^aBuffered HF: 34.6% (wt.) NH₄F, 6.8% (wt.) HF, 58.6% H₂O.

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